

## NOTES AND OBSERVATIONS.

THE ORDER NEUROPTERA.—It would be of much interest to myself and some other entomologists in New Zealand if a brief statement were made through the pages of the 'Entomologist' as to what extent the breaking up of the old Order Neuroptera into a number of new Orders is generally approved by British entomologists. In the 'Cambridge Natural History' the Order Neuroptera is dealt with in the broad sense, and is subdivided into families in accordance with the system followed by most of the older entomologists. Recently, however, attempts have been made to raise most of these families to ordinal status and to give them new names. For example, we find the Perlidæ spoken of as the Order Perlaria; the Ephemeridæ as the Order Plectoptera; the Sialidæ as the Order Megaloptera; the Panorpidæ as the Order Mecoptera, and so on. The Phryganidæ have of course long been regarded by many writers as a distinct order, the Trichoptera and the Dragonflies as another Order—the Odonata, although even in these cases opinion does not appear to be by any means unanimous. It is almost impossible for workers out here to discriminate between the views of one or two special students and those of entomologists in general, and hence some authoritative statement on the questions I have raised would be very welcome. Incidentally, I gather from the writings of Mr. Lucas in your pages that the old Order Neuroptera has not been entirely abandoned, and also that the old family designations appertaining thereto are still in current use amongst British entomologists.—G. V. HUDSON; Wellington, New Zealand.

[In vol. xlii, 1909, will be found an article by Dr. D. Sharp, giving a scientific scheme of the natural orders of insects, and since that time it has been the one employed by the 'Entomologist' in its index, etc. In this scheme the heterogeneous Neuroptera of Linnæus is broken up into its natural divisions. This scheme is in the main that proposed by Dr. Shipley in 'Zool. Anz.,' xxviii, 1904, and, as it is made use of in Prof. Sedgwick's 'Text-book of Zoology,' vol. iii, 1909, it has practically the sanction of Cambridge biologists. Dr. Sharp, we know, would like to amend the list of Orders in his 'Insecta' if only the publishers would produce a new edition. Since 1909 Mr. Lucas has always used the term Neuroptera in its restricted sense, and we would very much like all our contributors to do the same. We append the list of Orders:

## APTERYGOTA:

Protura	} Wingless insects supposed to have descended from wingless ancestors.
Collembola	
Campodeioidea	
Thysanura	

## ANAPTERYGOTA:

Mallophaga	} Wingless insects whose ancestors were probably winged.
Anoplura	
Siphonaptera	

## EXOPTERYGOTA :

Orthoptera  
 Plecoptera\*  
 Psocoptera  
 Zoraptera  
 Isoptera  
 Embioptera  
 Ephemeroptera  
 Paraneuroptera  
 = Odonata  
 Thysanoptera  
 Hemiptera

Winged insects whose wings develop outside the body.

## ENDOPTERYGOTA :

Neuroptera  
 Trichoptera  
 Lepidoptera  
 Coleoptera  
 Strepsiptera  
 Diptera  
 Hymenoptera

Winged insects whose wings arise as invaginations of the hypodermis, and for a time project within the body.

It will be noticed that Protura and Zoraptera have been added to the list of 1909, and Dr. Chapman suggests a small Order, Zeugoptera, between the Trichoptera and Lepidoptera. Some biologists prefer to separate the earwigs from the Orthoptera as Dermaptera; and some would still further reduce the Neuroptera by breaking off the Scorpionflies, etc., at one end, as **Mecoptera**, and a group containing the alderflies and others, as **Megaloptera**, from the other.—W. J. L.]

LEUCANIA VITELLINA REARED FROM OVA.—In October, 1920, Mr. L. W. Newman sent me some ova of *L. vitellina*. These hatched the same month and I placed the larvæ on *Poa annua*. I kept them in my sitting-room, where there was generally a fire every evening. They did not attempt to hibernate, but fed right through the winter. As they got larger I moved them into a large pan in which I put a pot of Cocksfoot grass. I had potted up a number of small tufts of this grass, which I brought on in the greenhouse, and I used to change the food every other night. When forcing this species in a dry room it is advisable to have the grass slightly damp, as when changing their skins the larvæ have difficulty in getting out of them. It is not a good plan to sprinkle them with water otherwise they go off. The grass, being grown in a damp greenhouse, is moist enough. They had all pupated by the middle of April, 1921; the first emergence was on May 18th and the last on June 8th. They always emerged in the early morning. Almost the whole brood were males and all large specimens.—H. McD. EDELSTEN; Oakhurst, Balcombe Road, Haywards Heath.

EARLY AND LATE DATES FOR LEPIDOPTERA.—The following dates of appearance of certain species of Lepidoptera in this district during the past abnormal season may be of interest: February 16th, *Selenia bilunaria* and *Eupithecia pumilata* (the last specimen seen of the

\* The components of the Neuroptera (Linn.) are in block type.